

## **CHAPTER 7: RESPONSIBILITIES OF TEACHERS, STUDENTS, PARENTS, ADMINISTRATORS**

For students to achieve the high levels of mathematical understanding promoted in this framework, all parties to the educational process—teachers, students, parents, and administrators—need to play an active part in the process. Student success is maximized when all four parties coordinate their efforts. Teachers must take the responsibility for implementing a curriculum that provides students with a rigorous and meaningful experience in learning mathematics; students must respond by expending the effort to do as well as they can; parents must support and monitor student work; and administrators must provide the leadership that is central to a schoolwide mathematics program in which all students experience success.

Each of these four groups is responsible for lending support to the other three in pursuit of the goal of good education. This interlinked system of support consists of, at least, the following components:

- Establishing clear goals that are focused on students' learning of the mathematical content standards
- Developing a centralized system at the school level for monitoring students' academic progress
- Forging community and state partnerships based on clearly defined roles and responsibilities of all stakeholders
- Establishing a clear and consistent system of communication between school staff members and community stakeholders (e.g., parents, staff from local educational agencies, and business leaders)
- Having the goal that all students will leave school proficient in all grade-level standards covered in that particular school and ready for instruction in the grade-

7848 level standards in their next school, for enrollment in college-level mathematics, or  
7849 for workplace training

## 7850 **Responsibilities of Teachers**

7851 Students' success in mathematics depends on the teacher more than on any  
7852 other factor. Teachers are responsible for teaching mathematics in a way that  
7853 provides exciting, balanced, high-quality programs. Teachers must strive to create  
7854 an environment that enhances the mathematical understanding of all students.  
7855 Teachers should be thoroughly versed in the content of the mathematics curriculum  
7856 and be able to use various instructional strategies to help all students learn. They  
7857 should continually evaluate the effectiveness of their teaching strategies and the  
7858 usefulness of tasks and assignments, making adjustments when necessary or  
7859 appropriate. In addition, teachers are responsible for assessing and monitoring  
7860 student progress regularly and for providing help, enrichment, or acceleration as  
7861 needed.

7862 The California Standards for the Teaching Profession provides a framework of six  
7863 instructional areas that can be applied to mathematics and across the curriculum  
7864 (California Commission on Teacher Credentialing 1997):

- 7865 1. Engaging and supporting all students in learning
- 7866 2. Creating and maintaining effective environments for student learning
- 7867 3. Understanding and organizing subject matter for student learning
- 7868 4. Planning instruction and designing learning experiences for all students
- 7869 5. Assessing student learning
- 7870 6. Developing as a professional educator

7871 Together with others in the school community, teachers are responsible for  
7872 establishing good working relationships with parents and involving them as much as  
7873 possible in their children's mathematics education. They should inform parents about

appropriate roles for parents, expectations for student work, and student progress. Teachers should also make clear to parents the knowledge and skills contained in the Mathematics Content Standards and the nature of state assessments that measure student achievement.

Teachers who continue their own education and professional development throughout their careers are more likely than others to be acquainted both with mathematical content and with new developments in mathematics education. Their own professional growth should be as important to them as the growth and learning of their students.

Teachers' acquisition of this ever-expanding knowledge of the what and how of comprehensive and balanced mathematics instruction must be supported at all levels: state, county, district, and school. School district governing boards, superintendents, central office administrators, principals, mentors, teacher leaders, university faculty, subject-matter networks, and professional organizations also play key roles in developing and maintaining teacher expertise.

Ideally, teachers and administrators will support each other in a cooperative relationship that has as its goal the highest possible achievement in mathematics for all students.

Teachers should notify administrators of any issues that require administrative intervention. These issues may range from student discipline and classroom management problems to more immediate practical needs, such as additional instructional materials, repair of classroom fixtures, reduction of noise that interferes with learning and instruction, or excessive interruptions.

### **Responsibilities of Students**

All students need a solid foundation in mathematics and all are capable of learning challenging mathematical content, although individual differences in

educational outcomes are inevitable. Students must recognize that learning and progressing in mathematics result from dedication and determination.

An essential starting point for students is to take their mathematics studies seriously by working to become proficient and by participating actively in classroom instruction. They must make a commitment to attend all scheduled classes, complete all homework assignments, and acquire a determination to resolve problems and difficulties. Ideally, students must support one another and must cooperate with their teachers. They must persist when the mathematics content becomes challenging.

Each level of mathematical growth requires mastery of the preceding level. At each stage students must learn and reinforce basic skills and also make a concerted effort to understand mathematical concepts and to apply those concepts and skills to problem solving. Students should also be encouraged to learn, understand, and master the many different dimensions of mathematics by learning to reason mathematically, to employ a variety of methods for problem solving, and to communicate and validate solutions mathematically, giving accurate and detailed proofs where needed. Although good teachers can provide encouragement and help, students are responsible for their own learning, and no one can learn for them.

Realistically, no one can expect all students to enter mathematics instruction with high levels of personal responsibility or motivation to learn mathematics. Students who are not highly responsible or motivated should not be ignored, however.

Parents, the school, other stakeholders, and even the instructional materials should contribute to helping all students accept personal responsibility. Good schoolwide management plans, for example, can improve attendance dramatically. Many students need to be taught good study skills. Effective instruction will give students the success that, in turn, will motivate them to work toward more and greater success.

Teachers can provide needed support by stressing that mathematics learning requires considerable effort from all students and that persistent effort will greatly improve their learning and achievement. In other words gaining competency in mathematics does not require inherent mathematical talent, but it does require sustained effort and hard work (Stevenson et al. 1990). Finally, good in-class management systems will reduce the extent to which one student's lack of responsibility infringes on the efforts of others.

### **Responsibilities of Parents and Families**

Ideally, all parents should be strong advocates of their children's education. Many parents may need assistance and encouragement from the school to support them in this role.

Whether students are underachieving, average, gifted, or in need of individual attention, parents should recognize their own and their children's role in learning mathematics and achieving optimal success. They should know the specific academic standards their children are to meet at each grade level, and they should be able to monitor their children's performance and provide extra help when needed. Parents should be responsible for obtaining information regarding their children's progress and know how to interpret that information appropriately. Above all, they should encourage a positive attitude toward mathematics.

Parents are their children's first teachers. A child's early experiences with mathematics at home can provide an important foundation for learning the content standards for kindergarten (Saxe, Guberman, and Gearhart 1987). Parents and other family members can nurture and stimulate mathematics development in their children and, for many children, will need to be involved in their children's mathematics program at all grade levels (Stevenson et al. 1990).

7952        However, schools must take greater responsibility to support the early  
7953 mathematics development of children who are less fortunate and do not benefit from  
7954 an educated, supportive family environment. Such support may require after-school  
7955 homework, transportation services to bring children to school early for extra tutoring,  
7956 extended tutoring support, and similar kinds of programs.

7957        Parents should be encouraged to reinforce school learning of mathematics at  
7958 home by setting aside a place and the time for homework. They should check  
7959 regularly with their children to make sure that the assignments have been completed  
7960 and the material understood. It would be very helpful if, in addition, they were to  
7961 participate in both school and districtwide activities that may affect their children's  
7962 education, such as developing curricula, selecting instructional materials and  
7963 assessment instruments, and establishing local educational goals.

7964        Parents should feel comfortable requesting information from the school about the  
7965 existing mathematics curriculum and the standards for content and performance.  
7966 The school should encourage these requests and make such information readily  
7967 available by providing convenient access to instructional and enrichment materials.  
7968 Ideally, each textbook will be accompanied by a publisher's handbook to help  
7969 parents monitor their children's lessons.

7970        Frequently, parents are reluctant to become involved in mathematics education  
7971 because of their own lack of confidence with mathematics. Although parents do not  
7972 have to be mathematicians to participate actively in their children's mathematics  
7973 program, schools should consider inviting parents to participate in professional  
7974 development opportunities designed for the improvement of their personal  
7975 mathematics proficiency. Parents can support their children's mathematics  
7976 education by ensuring that their children complete homework assignments and  
7977 regularly attend school and by ensuring that their children recognize the importance  
7978 of achievement in mathematics.

## 7979 **Responsibilities of Administrators**

7980 Administrators are responsible for promoting the highest-quality mathematics  
7981 programs. It is their job to hire and assign appropriately credentialed, skilled, and  
7982 effective mathematics teachers and provide mentoring and professional support for  
7983 teachers when necessary. They should also monitor teachers' implementation of the  
7984 mathematics curriculum and evaluate teachers' ability to teach the curriculum and to  
7985 assess student performance and progress. Administrators should ensure that the  
7986 curriculum is coherent and consistent with the state standards and the guidelines in  
7987 this framework. As much as possible, they should ensure continuity in the  
7988 mathematics curriculum from classroom to classroom and among grade levels.

7989 Administrators play a critically important leadership role. They are responsible for  
7990 seeing that the schools maintain high standards for their mathematics offerings and  
7991 that quality programs are implemented for all students. Effective administrative  
7992 leadership encourages teachers, students, and parents to recognize the importance  
7993 of a quality mathematics program and actively support its implementation.  
7994 Administrators should respond appropriately to teachers' concerns about student  
7995 learning. They are also responsible for ensuring that each student has adequate and  
7996 appropriate instructional materials and supplies of suitable quality.

7997 Any explicit recommendation on what administrators can do to promote a  
7998 successful program in mathematics is likely to involve funding and therefore  
7999 decrease its chance of implementation. There is, however, an urgent  
8000 recommendation that can be implemented without funding: Administrators must  
8001 provide uninterrupted instruction time to teachers. Interruptions, such as intercom  
8002 announcements, call slips and messages for students, and nonmathematical  
8003 activities, such as field trips, athletic events, and other extracurricular activities, that  
8004 take place during class time have a significant negative impact on mathematics

instruction. Administrators are responsible for ensuring that such interruptions are limited as much as possible to real emergencies, with class time consistently protected and considered inviolable.

Administrators should develop among staff, students, and parents a climate of partnership, teamwork, collaboration, and innovation to sustain high achievement. Also essential is that administrators provide opportunities for teachers to develop collegial and collaborative relationships within their grade levels, including allowing adequate time for meetings and informal discussions. More precisely, administrators can use the suggestions in the list that follows to develop an environment that encourages achievement. Administrators should:

- Allot time at staff meetings (and perhaps invite experts to visit the school) to discuss recent research articles in mathematics and their usefulness and application to current school practices and the mathematics improvement plan.
- Provide time for monthly grade-level meetings that focus on assessing student progress toward achieving the standards and on modifying programs to improve student progress.
- Provide time for teachers to visit other classrooms, both within the school and at model implementation sites, to observe and discuss instructional strategies and materials used by teachers who are highly successful in fostering student learning and achievement in mathematics.
- Provide time for professional development, including many opportunities for staff members to receive coaching from those with expertise in teaching mathematics.
- Provide, if necessary, the resources needed to hire specially trained mathematics teachers so that these teachers can provide support to the faculty members for the implementation of the standards.



- 8030 • Communicate to parents the school district's expectations for student
- 8031 performance, including the content of the state standards and the nature of state
- 8032 assessments that measure student achievement.